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Natural remedies to covid-19: An inflammatory disease

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Abstract

Indisputably, healthy plants have been used as edibles and medicaments for decades. This particular is related to their nutritional value and also healing potential towards fight against human pathogen and treat insignificant to severe and acute ailments. In this current time, the corona virus disease which has recently led to the global pandemic have proven to have absolutely no definite solution or treatment policy amidst the agglutinative treatments and vaccines presently available with as-yet-not-known side effects. Although, this disease is known as a viral infection, signs or symptoms connected to this particular infection are 100% inflammatory. The research in this particular paper intends to create awareness to justify SARS-CoV-2 as an inflammatory disease with possible-potential plant-based drugs also known as alternative medicine towards relieve and cure for patients suffering extremely from its effects. Classic good examples of herbs used as remedy to inflammation can be a promising lead to the cure and vaccine formulation for SARS-CoV-2 regardless of the strains or mutation. These are *Glycyrrhiza glabra*, *Salix alba*, and also *Zingiber officinale* L. In this regard, plant species having anti-inflammatory activity are introduced as well as some of their chemical constituents involved in this metabolic activity.

Keywords: SARS-CoV-2, human pathogen, anti-inflammatory, *Glycyrrhiza glabra*, vaccine

1. Introduction

Inflammation has recently been a dynamic system which is triggered in response to mechanical injuries, microbial infection, burns and also other potential stimuli that could possibly be a threat to the well-being of the body. This particular system consists of change in blood flow, increased vascular permeability, destruction of tissues through activation and migration of leucocytes with synthesis of reactive oxidative burst, synthesis of local inflammatory mediators and also platelet activating factors. Inflammation is the perfect defence response of the body responsible for putting into order hazardous stimuli which includes allergies and injuries to tissues. This normally happens whenever infectious microorganisms (fungi, virus, bacteria) invade the body, settle in a particular tissue and is being circulated in the body meaning they reproduce in body cells. However, the untamed and uncontrolled inflammatory hit-back has recently been the major cause of continuous disorder from allergies, metabolic syndrome, cancer, cardiovascular and autoimmune related health conditions striking a huge economic problem on individuals and also the world at large^[1].

All these signs or symptoms and more have been identified in the current COVID-19 disease which has recently claimed lots of lives across the globe. The huge damaging effect of the infection which has caused the global pandemic have destroyed and also crippled the health-care sector, infrastructural development, especially economics, political, educational, research systems as well as moral ethics. In spite of the suggested vaccines and treatments, there is still absolutely no distinct treatment policy for the disease.

In closer view of these, Coronavirus if understood as an inflammatory infection, could possibly be cured and also heal the world from its pandemic. One of the elucidative reviews of publication recommends the extremity of SARS-CoV-2 disease is related with self-destruction of inflammatory immune responses which impede the evolution of protective immunity to infections.

It seems that the dysregulated immune responses are the primary source of demise. Severe attack from this disease has led to sepsis-like cytokine storm which suggests overreaction from

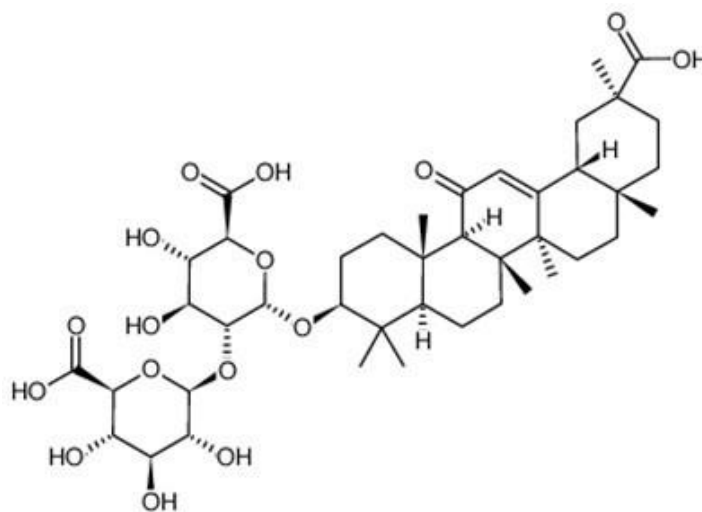
the immune system, blood clots, respiratory and cardiovascular complications. Antiviral therapies such as for instance chloroquine, remdesivir and hydrochloroquine might be efficient as preventive therapies, but it can be incapable to ensure the body-metabolism gains protective immunity. For that reason, SARS-CoV-2 must certainly be highly tailored with good, safe, efficient anti-inflammatory medication. The everyday practice of making use of plant materials as drugs has long been known since historic period, some of which are documented in books, and at this time on websites. Most adverse undesirable side effects attributable to synthetic drugs have raised progressively due to effective consequence of environmental changes and individual body-metabolism make-up. Thus, it is safe, effective and efficient to utilize natural basic products from plant with anti-inflammatory property within medicinal therapies to attain increased pharmacological activity and lowering} rate of excessive undesirable side effects. Alternative remedy has been available in use within traditional system of medicine for {treatment of numerous diseases and infections. And if considering the chance, it can result in novel drug pharmaceutical discovery towards the treatment of this highly tailored inflammatory disease generally known as SARS-CoV-2. The application of therapeutics from plants that regulate inflammation without compromising the adaptive immune responses may very well be most efficient very worthwhile therapeutic strategy. Understanding and successfully controlling inflammation is actually promising strategy for the handling of covid-19 disease.

There are actually an incredible number of plant species in the world, all with a variety of natural yet effective {therapeutic characteristics distinctive in mode of actions and subsequently favourable to humanity with no recorded adverse reaction if used within proportion of drug pharmaceutical formulation. Classic instances of plants previously used to cure inflammation which enable them to become a promising result in the cure and vaccine for SARS-CoV-2 irrespective of their strains or mutation are *Glycyrrhiza glabra*, *Salix alba*, and *Zingiber officinale* L.

2. Plant-Based remedy treatment for SARS-Cov-2

2.1 Liquorice

The roots of *Glycyrrhiza glabra* (liquorice) were known to Roman health professionals as *Radixdulcis* and also to Arab physicians as an effective treatment for cough, and the plant has been cultivated in Europe as early as the 18th century because of its peculiar taste. *Glycyrrhiza glabra* is indexed in the British Pharmaceutical Codex (1973 ed.) and possesses triterpenes glycyrrhizin (6–13%) and glycyrrhizic acid, which happen to have anti-inflammatory activity. Glycyrrhizic acid is generally absorbed after hydrolysis as glycyrrhetic acid, which is really a potent inhibitor of 11 β -hydroxysteroid dehydrogenase an enzyme that catalyses the conversion of cortisol to cortisone, hence mineral ocorticoid action. There are a vast number of commercial teas, ointments, suppositories, and tobacco products on the market. The medicine used in cosmetology is for sunscreen and skin care products.



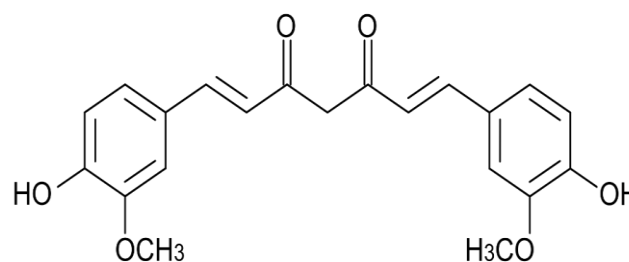
Glycyrrhizic acid

Using a molecular docking study, I augmented using 6LU7 COVID 19 protease with the active component of liquorice, the end result showed substantial optimum inhibition. In order to support this postulate, however, clinical trials are adequately needed [2].

2.2 Tumeric

The introduction of turmeric (roots of *Curcuma longa* L.) from Java into the European Union most probably made use of Arab merchants. It was identified by Dioskurides as a beautiful native Indian plant that appears like ginger but contains a yellow-dye and has an unsatisfiable bitter taste. *Curcuma longa* L. has long been used by the Chinese and Indians as a general cosmetic and also for making curry for hundreds of years. It was discovered using a list of medicinal plants sold in 1450 in Frankfurt. The theory of the yellow

color in *Curcuma longa* L. is Curcumin, a yellow pigment. This dye inhibits both COX and nitric oxide synthetase (NOS) enzymatic activity and has shown clinical promise for treating inflammation.

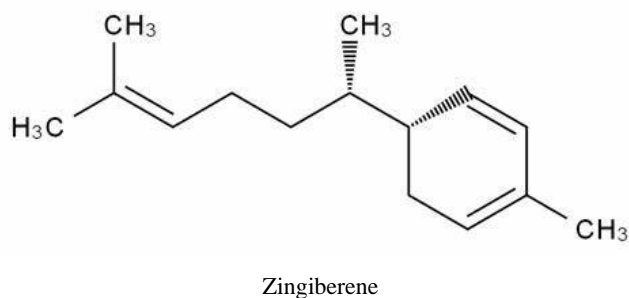


Curcumin

To show the anti-inflammatory after-effect of curcumin, several clinical studies have already been carried out. Their findings suggest that curcumin is often effective in improving inflammation of symptoms of rheumatoid arthritis (RA) and reducing the clinical manifestation of RA, such as joint swelling and morning stiffness, compared to the positive control phenylbutazone [3]. In addition, curcumin was evaluated in people with anterior uveitis; exhaustive remission occurred only after two weeks [4]. Another clinical test has proved the efficacy of curcumin in patients with dyspepsia and/or gastric ulcers. Subjects experienced remission after 12 weeks (maximum) [5] in this research. Curcumin is useful in the treatment of irritable bowel syndrome (IBS) [6] and also serves as a reducing agent for slow graft rejection (DGR) following renal transplant [7]. Curcumin is also helpful in inhibiting inflammatory bowel disease (IBD) and in reducing the rate of sedimentation in patients suffering from IBD [8]. {It has also been reported to be helpful for the preservation of an improvement in ulcerative colitis [9] and psoriasis (selective phosphorylase kinase prohibition) [10].

2.3 Ginger

Zingiber officinale is a native of the Gingi area near the pondichery of India, and around 1285, the Venetian marco polo is said to be the first European to see all living plants. It was actually used by the Greeks and Romans, who even introduced it via the Red Sea, to spice food and beverages. Throughout the Middle Ages, ginger was a significant economic commodity owned by the Venetians. The Venetians had built business houses in Constantinople as well as Sudak on the shores of the Black Sea, had a ginger monopoly, which caravans had brought along the Silk Route. Until the late 15th century, the Venetian monopoly survived, when the Portuguese navigators were able to sail to Calicut in India. *Officinale* (Ginger) was first introduced to South America and later exported to Spain for cultivation. Arylalkalones that inhibit the enzymatic activity of COX are provided by the plant with inflammatory treatment potential.

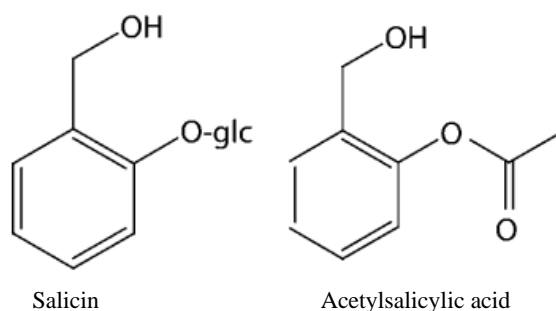


Oral *Z. Officinale* extract administration reveals a number of contradictory results in terms of intake volume. However, administration of squeezed ginger extract to rats once or twice increased tumor necrosis factor in peritoneal cells, increased serum corticosterone levels and decreased pro-inflammatory markers during long-term ingestion of the extract [12]. *Z. Officinale* has also been studied in type 2 diabetics with low-grade inflammation; serum TNF levels and high-sensitivity C-reactive protein (hs-CRP) have certainly decreased after 8 weeks of treatment [11]. Ginger had effectiveness in pain improvement in people with osteoarthritis, just like Diclofenac 100 mg, but also without side effects [13]. In OA patients, ginger extract was compared to ibuprofen and indomethacin; the findings showed an equally improved role of ibuprofen, indomethacin, and ginger extract in the pain

score [14-15]. In musculoskeletal and rheumatism patients, ginger powder has recently had a meliorative effect by inhibiting cyclooxygenase and lipoxygenase pathways in synovial fluid [16].

2.4 White Willow

The *Salix alba* L. impact. (white willow) is mainly due to salicin, a glycoside. Salicin is an antipyretic and analgesic agent and is used to treat rheumatic fever (salicilin tablets; British Pharmaceutical Codex, 1949). Acetylsalicylic acid, a component of salicin, was initially synthesized in 1893. Aspirin has become the most commonly used salicin-containing prescription medicine today. Today, *Salix fragilis* and *Salix purpurea* (Salicaceae), which may be native to Eurasia, are the main commercial sources of salicin. The mechanism by which aspirin produces its anti-inflammatory effect relies on the fact that covalent COX is irreversibly inactivated by it.



2.5 Black Current

The common name of *Ribes nigrum* is blackcurrant, a rich source of poly-unsaturated n-6 fatty acid (PUFA) and linoleic acid [17]. Scientists examined the effect of blackcurrant oil (BCO) on patients in one clinical trial performed in patients with RA within 6 weeks; the findings ended as follows: attenuation of morning stiffness in the study community and decrease of pro-inflammatory mediators in peripheral blood monocytes [18]. Ailment activity signs of RA patients have been reduced following 24 weeks of treatment cycle with BC seed oil. Overall, there were no major variations in clinical symptoms and signs between the placebo group and the case group [19]. In 40 stable participants older than 65 years, BC seed oil also has a mild reinforcing stimulus impact on immune responses and inhibitory effects with regard to PGE2 biosynthesis [17]. A dozen healthy subjects have ingested BC oil for additional clinical analysis; attenuation in LTB4 biosynthesis via polymorphonuclear neutrophil (PMN) and increases in linoleic acid in PMN phospholipids have now been observed [20]. BC skin extract could probably reduce the expression of temperature shock proteins (HSP70 and HSP90), COX-2 and NF- κ B in mice under direct exposure to diethyl-nitrosamine (hepatocarcinogen) [21].

2.6 Avocado/Soyabean

Persea americana/Glycine max. These are native indigenous fruits in Central America, Eastern Asia. 153 OA patients were enrolled and treated with Avocado/soybean unjustifiable (ASU) along with NSAID in a prospective multicenter, 3-month randomized control test; after 45 days of care, the NSAID requirement decreased, but there were no substantial improvements in patient discomfort results [22]. The efficacy of ASU has been tested in 3 clinical trials performed on OA patients. A few of them showed a decrease in Lequesne's functional index (LFI), pain, and disability; similarly, in 71

percent of patients in the instance group vs. 36 percent in the control group, far more than 50 percent attenuation in NSAID needs was found, but in the final trial ^[23] zero inter-group variations in joint space width (JSW) were described, which was seen. No improvement has been recorded in JSW during 3 years of hip follow-up in OA patients receiving ASU, but 20 percent prevention of JSW exacerbation has occurred ^[24]. ASU has also been administered to one hundred patients with additive scleroderma and morphea; this unique study shows that ASU has an advantageous after-effect in the battle against atrophy, deformity and contracture when ASU therapy is started at an early stage of the disease ^[25]. Relevant and nutritional administrations of avocado and soybean extract were evaluated in individuals with moderate to modest sclerosis vulvar lichen (VLS). The principal signs and symptoms of the disease reduced substantially at the end of 24 weeks of treatment duration ^[26].

2.7 Olive

Olea europaea is a genus in the family of Oleaceae. In healthy individuals and patients with metabolic syndrome, the excellent effect of extra virgin olive oil (EVOO) on the regulation of postprandial plasma lipo-polysaccharide, pro-inflammatory cytokines, TXB2 and LTB4 and decreased efficiency in the risk of coronary heart disease has been demonstrated ^[27, 28]. In comparison with sunflower oil (SFO), oral essential olive oil has improved the injury healing process and shortened the hospitalization time in deep second degree with more burn wound patients ^[29]. In addition, the directory of disease activity and tumor incidence of colorectal cancer associated with ulcerative colitis and pro-inflammatory cytokines in rats was alleviated in contrast to that of SFO-fed rats after EVOO enriched dietary intake ^[30].

3. Conclusion

Herbal plants are very important aspect of alternative medicine. This plant species above if thoroughly studied to the depth could be a possible novel drug synthesis to cure the covid-19 inflammatory disease. There are still numerous herbs with good anti-inflammatory activity, but the scope of this study is limited to plant materials which can serve as a potent cure the recent coronavirus pandemic. It should also be noted that the word alternative medicine refers to plant natural based compounds, lifestyles, exercise and sleep and eating habits. There are various studies of plant bioactive compound isolation majorly referred to as postulate because of inconsistency of results due to methods of extraction which have direct impact on the chemical constituent. However, further evident based studies are needed to understand the approach and mechanism of the inhibitory effect of these plants against the SARS-CoV-2 disease.

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